

LAKE HAVEN OWNERS ASSOCIATION (PWSNO 1280049) SOURCE WATER ASSESSMENT REPORT

July 25, 2001



State of Idaho Department of Environmental Quality

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SOURCE WATER ASSESSMENT FOR LAKE HAVEN OWNERS ASSOCIATION

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your particular drinking water source is based on a land use inventory within a 1,000 foot radius of your well, your water quality history, construction characteristics associated with your well or wells, and site specific sensitivity factors associated with the aquifer your water is drawn from.

This report, *Source Water Assessment for Lake Haven Owners Association* describes the public drinking water source, potential contaminant sites located within a 1000-foot boundary around the drinking water source, and the susceptibility (risk) that may be associated with any associated potential contaminants. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Potential Contaminant Inventory. The Lake Haven Owners Association water system serves a small community of mobile homes and seasonal residences on the West Side of Spirit Lake. Lake Haven gets drinking water from two deep wells. No treatment of the water prior to distribution is currently required. Potential contaminant sources documented inside the 1000-foot boundaries around the wells include surface water, roads, and septic system components. Well #1 is within 50 feet of the high water level for Spirit Lake. There is a septic tank located about 90 feet from Well #2.

The map on page 5 of this report shows the well locations, the 1000-foot boundaries and approximate locations of roads, buildings and the septic system components relative to the wells. Table 1 summarizes information about the sites inventoried and contaminants that may be associated with them.

Table 1. Lake Haven Owners Association Potential Contaminant Inventory

Map ID	Source Description	Potential Contaminants	Source of Information
1	Roads	IOC, SOC, VOC Microbial,	USGS Map
2	Surface Water	IOC, SOC, VOC Microbial,	USGS Map
3-9	Septic System Components	Nitrate (IOC), Microbial	PWS file

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
USGS= United States Geological Survey, PWS = Public Water System

Water Quality History. Lake Haven Owners Association is required to monitor quarterly for bacterial contamination. Bacteria were present in samples tested in August September, October and December 1996; June and August 1997; September 1998; June and December 1999; and September 2000. Nitrate concentrations have fluctuated from undetectable levels to 0.140 mg/l since annual testing began in 1993. The Maximum Contaminant Level (MCL) for nitrate is 10 mg/l. Water from Well #2 has an iron concentration of 3.58 mg/l and a manganese concentration of 0.13 mg/l. Neither contaminant is regulated, but at those concentrations they can impart color, taste and odor to the water.

Well Construction. The first Lake Haven Owners Association well was drilled to a depth of 603 feet in January 1994. The casing extends 198 feet below ground surface, terminating in a granite stratum according to the well log. The bentonite clay surface seal, 220 feet deep, ends in a layer of soil and gravel. Well 2, drilled in December 1997, is completed in a granite stratum 700 feet below the ground surface. The bentonite clay surface seal is 20 feet deep, terminating in a sand and gravel stratum. Both wells have 6-inch casings. Current Idaho Department of Water Resources standards for well construction require the wall thickness of a six-inch casing to be a minimum of 0.280 inches. The wall thicknesses of the Lake Haven Owners Association well casings are 0.25 inches. Well #1 is inside the 100-year flood plain for Spirit Lake.

Table 2. Selected Characteristics of Lake Haven Owners Association Wells

Well	Total Depth (ft.)	Depth to Ground Water (ft)	Static Water Level (ft)	Depth of Surface Seal (ft)	Depth of Casing (ft)
Well #1	603	279	216	20	198
Well #2	700	80	240	20	82

Well Site Characteristics. Soils in the 1000-foot zones around the wells are predominantly poorly drained to moderately well drained, providing some protection against migration of contaminants to the wells. Sand and gravel are reported to a depth of 198 feet for Well 1 and to 72 feet for Well 2. The first water bearing stratum in Well 1 was encountered 279 feet below the surface. In Well 2, ground water was first encountered at 82 feet.

Susceptibility to Contamination. A susceptibility analysis DEQ conducted on the Lake Haven Owners Association wells, incorporating information from the public water system file, and from the well logs, automatically ranked both wells highly susceptible to microbial contamination. The high water level for Spirit Lake falls inside the Sanitary Setback for Well #1. There is a septic tank within 100 feet of Well #2, putting it at high risk for both microbial and nitrate contamination.

The wells ranked moderately susceptible to other classes of regulated contaminants. The susceptibility analysis worksheets for your wells on pages 6 and 7 of this report show how your wells were scored. Formulas used to compute the final susceptibility scores are shown on the bottom of the worksheet.

Source Water Protection. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Lake Haven Owners Association source water protection activities should focus on preventing bacteria and other surface contaminants from entering the system through the pump pit, reservoir and distribution lines. The Association needs to install a poured concrete floor in the pump pit with a screened, daylighted drain. Both the pump pit and the reservoir need to be fitted with watertight, overlapping metal access covers that can be locked.

The Association may want to educate its water users about back flow prevention and proper septic system maintenance as ways to protect their ground water, and may want to promote water conservation since the volume of water produced by the current wells is low. The club should review its maintenance practices to be sure that no solvents, herbicides, road oil, dust abatement compounds etc. are used or stored within 50 feet of the wells.

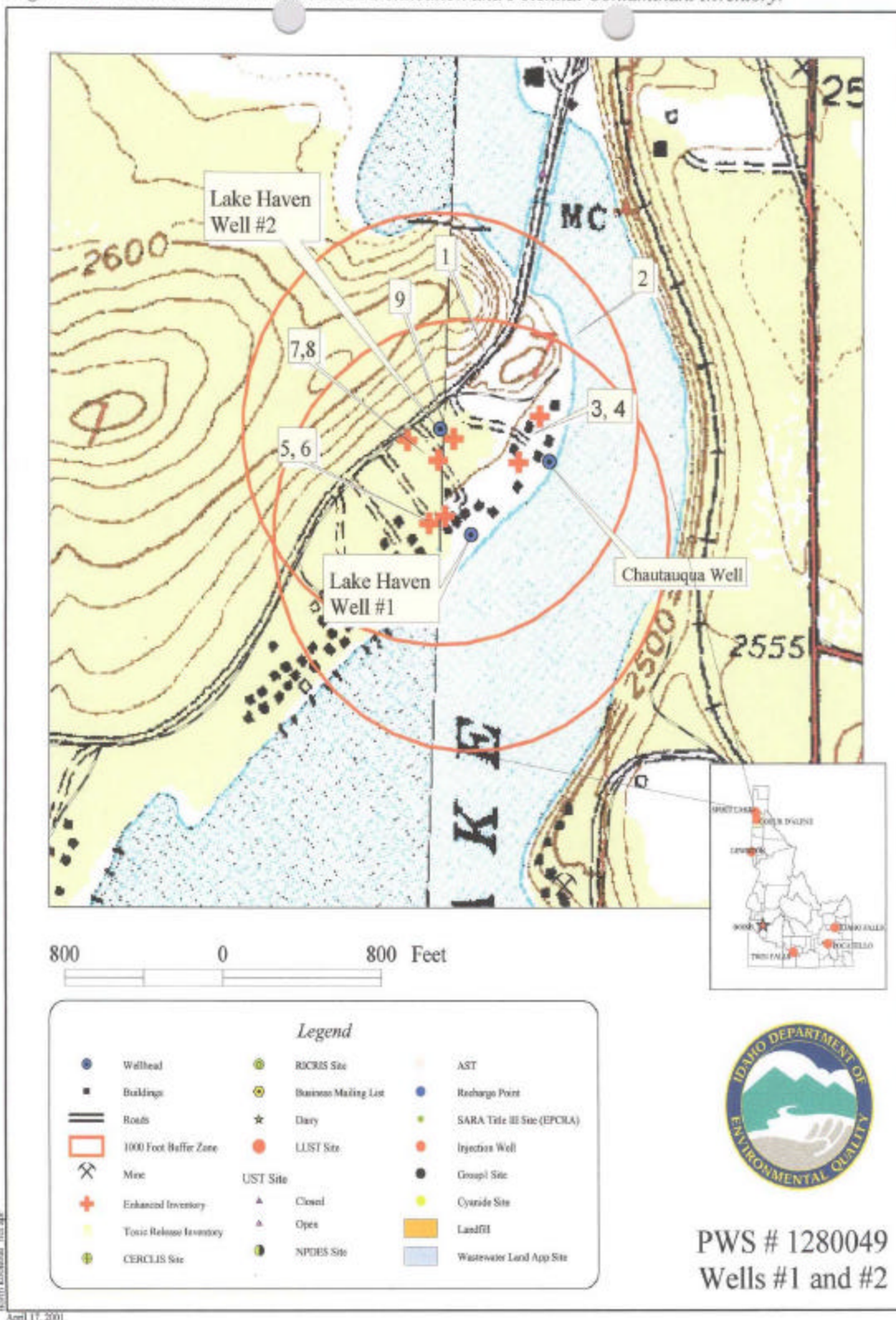
Because the Association doesn't have direct jurisdiction over the entire 1000-foot protection zones around its wells, it will be important to form partnerships with neighbors, and public agencies to regulate land uses that can degrade ground water quality. The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

For assistance in developing source water protection strategies please contact Tony Davis at the Coeur d'Alene Regional DEQ office at 208 769-1422.

DEQ website:

<http://www.deq.state.id.us>

Figure 1. Lake Haven Owners Association Delineation and Potential Contaminant Inventory.



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Ground Water Susceptibility Analysis

Public Water System Name : LAKE HAVEN OWNERS ASSN

Well# :

WELL #1

Public Water System Number : 1280049

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1. System Construction		SCORE			
Drill Date	1/11/94				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1997			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	NO	1			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - Sanitary Setback		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Sanitary Setback	RANGELAND, WOODLAND, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	YES. SURFACE WATER	NO	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Sanitary Setback		0	0	0	0
Potential Contaminant / Land Use - 1000-foot Radius					
Contaminant sources present (Number of Sources)	YES	3	2	2	3
(Score = # Sources X 2) 8 Points Maximum		6	4	4	6
Sources of Class II or III leacheable contaminants or Microbials	YES	3	2	2	
4 Points Maximum		3	2	2	
1000-foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-foot Radius	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-foot Radius		9	6	6	6
Cumulative Potential Contaminant / Land Use Score		9	6	6	6
4. Final Susceptibility Source Score		10	10	10	10
5. Final Well Ranking		Moderate	Moderate	Moderate	*High

* Source scored highly susceptible due to presence of surface water within sanitary setback.

Ground Water Susceptibility Analysis

Public Water System Name : **LAKE HAVEN OWNERS ASSN**
Public Water System Number : **1280049**

Well# : **WELL 2**
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1. System Construction		SCORE			
Drill Date	12/1/97				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1997			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - Sanitary Setback		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Sanitary Setback	RANGELAND, WOODLAND, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	YES Septic Tank within 100 feet of well	YES	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Sanitary Setback		0	0	0	0
Potential Contaminant / Land Use - 1000-foot Radius					
Contaminant sources present (Number of Sources)	YES	3	2	2	3
(Score = # Sources X 2) 8 Points Maximum		6	4	4	6
Sources of Class II or III leacheable contaminants or Microbials	YES	3	2	2	
4 Points Maximum		3	2	2	
1000-foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-foot Radius	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-foot Radius		9	6	6	6
Cumulative Potential Contaminant / Land Use Score		9	6	6	6
4. Final Susceptibility Source Score		10	10	10	10
5. Final Well Ranking		*High	Moderate	Moderate	*High

*** Source scored highly susceptible due to presence of septic tank within sanitary setback.**

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as **ASuperfund®** is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.